

Name: \_\_\_\_\_ Date: \_\_\_\_\_  
 Algebra 2/Trig: Arithmetic Sequences

DO NOW: (Review)

a] The expression  $\sqrt[4]{16a^6b^4}$  is equivalent to

- (1)  $2a^2b$  (3)  $4a^2b$   
 (2)  $2a^{\frac{3}{2}}b$  (4)  $4a^{\frac{3}{2}}b$

1) Find the next two terms of each sequence. Then describe the pattern. The equations will be completed later.

1, 3, 5, 7, 9, \_\_\_\_\_, \_\_\_\_\_ Description: \_\_\_\_\_ Equation: \_\_\_\_\_

2, 7, 12, 17, 22, \_\_\_\_\_, \_\_\_\_\_ Description: \_\_\_\_\_ Equation: \_\_\_\_\_

-416, -323, -230, -137, \_\_\_\_\_, \_\_\_\_\_ Description: \_\_\_\_\_ Equation: \_\_\_\_\_

-2, -5, -8, -11, \_\_\_\_\_, \_\_\_\_\_ Description: \_\_\_\_\_ Equation: \_\_\_\_\_

2) So we take the **1st term**, and keep adding the \_\_\_\_\_ over and over again. This is the definition of an **arithmetic sequence**.

3) **(the nth term) = (the 1st term) + (the common difference)(n - 1)**

4) In other words...  $a_n = a_1 + d(n - 1)$

5) Examine the following sequence: 2, 7, 12, 17, 22, ...

a] What is the **1st term**?

b] What is the **common difference**?

c] What is the 35<sup>th</sup> term?

d] What is the formula to find the **nth** term?

6) Examine the following sequence: 100, 90, 80, 70, 60, ...

- a] What is the **1st term**?
- b] What is the **common difference**?
- c] What is the 28<sup>th</sup> term?
- d] What is the formula to find the **nth** term?

\*\*\*So the **common difference can be positive OR negative!!!**

7) Mrs. Jacknis wants to train for an upcoming run. She has developed a plan to work up her endurance. On day 1, she will run 3 miles. On day 2, she will run 5 miles. On day 3, she will run 7 miles. On day 3, she will run 9 miles, and so on.

- a] Model this situation using the formula for an **arithmetic sequence**.
- b] On what day will she be strong enough to run 27 miles?

8) How many terms are in the sequence: 7, 10, 13, ..., 55 ?

9) Find  $a_{20}$  of the arithmetic sequence where  $a_1 = 6$  and  $a_7 = 18$

10) Insert 3 arithmetic means between 7 and 23.

11) Examine the following sequence: 3, 7, 11, 15, 19, ...

a] What is the **1st term**?

b] What is the **common difference**?

c] What is the 13<sup>th</sup> term?

d] What is the formula to find the **nth** term?

12) Examine the sequence: 111, 99, 87, 75, 63, ...

a] What is the **1st term**?

b] What is the **common difference**?

c] What is the 40<sup>th</sup> term?

d] What is the formula to find the **nth** term?

13) Find the 311<sup>th</sup> term in the sequence: 7, 25, 43, 61, ...

14) Find the 90<sup>th</sup> term in the sequence: 100, 97, 94, 91, ...

15) Find  $a_{13}$  of the arithmetic sequence where  $a_4 = 7$  and  $a_8 = -17$

16) Insert 2 arithmetic means between 8 and 23